

## **RETI Stakeholder Steering Committee**

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# **Response to Phase 1A Draft Report Comments**

B&V Project Number 149148.0010

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## **1.0 Executive Summary**

Integral to the RETI process is stakeholder input. This document presents a discussion of comments received by Black & Veatch regarding the Renewable Energy Transmission Initiative (RETI) Phase 1A Draft Report of March 14, 2008 (draft report). This document focuses on comments that proposed changes to the Phase 1 methodology or assumptions. It is issued in conjunction with the Draft Final RETI Phase 1A Report.

The draft report includes information on the methodology, assumptions, renewable technologies, and resources which will be used to identify and assess Competitive Renewable Energy Zones, or “CREZ”. RETI stakeholders and public participants were encouraged to provide comments on the draft report to the RETI Stakeholder Steering Committee (SSC) on March 28, 2008. Black & Veatch received summarized comments from the SSC, and some individual parties, on April 4, 2008. Additional comments were submitted though April 11.

Forty parties provided well over 100 individual comments on the draft report. Black & Veatch is very grateful for the time and effort these parties spent reading the draft report and preparing thoughtful comments. Many of the comments were positive, noting that the RETI process was capturing the relevant issues and the report included useful and appropriate information for the analysis. Several parties, including the Environmental Parties and the Independent Energy Producers (IEP) expressed concern that there was not adequate time for parties to fully review and comment on the draft report. For this reason comments were accepted through April 11 on the draft report.

The category receiving the most comments was environmental considerations, specifically the need to include additional environmental screening factors in resource assessment and development of environmental criteria to rank CREZs. At its March 19, 2008 meeting, the SSC established an Environmental Working Group (EWG) with the charter to develop these criteria and advise the SSC and Black & Veatch on the methodology to integrate this in the Phase 1 analysis. Black & Veatch will incorporate the environmental screens and ranking criteria into the resource assessment and CREZ development processes once it has been developed by the EWG and approved by the SSC. A discussion of this is included in the proposed Phase 1B Scope of Work.

There were many detailed and thoughtful comments on the solar thermal and photovoltaic sections in the report. Solar technologies show great promise and the solar resource is abundant and widely distributed. Solar will clearly play a role in California’s energy future. Many solar technologies, however, are emerging, making an accurate assessment of costs and performance difficult. Many of the comments focused on the

costs and performance of solar technologies. Black & Veatch amended the report in several sections in response to the comments.

Several stakeholders also commented on the danger of relying too heavily on estimates, which by their very nature, include a margin of error. Black & Veatch agrees. It would not be prudent to eliminate potential CREZs from consideration if the difference in their rank is 5 percent, but the margin of error is 20 percent. Black & Veatch looks forward to working with stakeholders in Phase 1B to develop the details of a ranking protocol that recognizes uncertainty, but also protects clarity of information and process efficiency.

In addition to these areas, stakeholders submitted comments and suggestions on much of the remainder of the report, including the proposed methodology, general assumptions, technology assumptions, and resource assessments and screening. The remainder of this document discusses these comments, and whether and how these resulted in changes to the draft report.

## 2.0 Introduction

Fundamental to the RETI is the participation of a broad range of stakeholder interests. The development of substantial quantities of renewable resource and the transmission required to access these resources, will impact many different industries and interests, and a goal of RETI is to insure that these interests are represented in the planning process. Additionally, it is crucial that there is a shared understanding of the methodology and assumptions used in the analysis. By design, RETI is an open process rather than a “black box” approach to planning. It is imperative that the methodology used in RETI is well understood and acceptable to the impacted participants. Further, there are a myriad of assumptions used in the RETI, and developing consensus agreement on the assumptions, and the approach to developing these assumptions, will result in a shared understanding of the factors underlying the RETI recommendations. To that end, the RETI process strives to be as open and inclusive as possible.

In developing the assumptions, methodology and resource assessments presented in the draft report, Black & Veatch worked with the RETI Phase 1A Working Group and SSC to solicit input from industry groups. Stakeholder representatives and the public were encouraged to provide comments on the draft report. Black & Veatch received comments from (1) SSC members that summarized and aggregated positions held by their respective industry participants and (2) comments from individual parties.

## 2.1 Background

Black & Veatch released the Renewable Energy Transmission Initiative Phase 1A Draft Report on March 14, 2008. Parties were encouraged to provide comments to the RETI SSC on March 28, 2008, with the SSC providing summarized comments to Black & Veatch on April 4, 2008. Forty parties provided well over 100 comments, including individual comments from the public and aggregated comments from SSC members. This document discusses the comments made, addresses questions from parties submitting comments, and discusses the changes made to the report to incorporate the stakeholder comments and ideas.

Table 2-1 contains a list of parties providing comments on the RETI Phase 1A Draft Report. All of the original comments are provided on the RETI website at [www.energy.ca.gov/RETI](http://www.energy.ca.gov/RETI).

<b>Table 2-1. Parties Providing Comments on the Draft Phase 1A Report.</b>	
<b>Party</b>	<b>Notation Used in This Report</b>
Alliance for Responsible Energy Policy	AREP
Ausra	Ausra
Biomass Industry (Gregg Morris)	Biomass Industry
BrightSource Energy	BrightSource
California Independent System Operator	CAISO
California Large Energy Consumers Association, California Manufacturers and Technology Association, The Utility Reform Network	Customer Group
California Wind Energy Association, California Biomass Energy Alliance, and various Concentrated Solar Power companies	CWEA/CBEA/CSP
First Solar	First Solar
Geothermal Energy Association Comments (including individual comments from Vulcan and Calpine)	GEA
Horizon Wind	Horizon
Independent Energy Producers Association	IEP
Infinia Corporation	Infinia
LaPena Law	La Pena
Natural Resources Defense Council and Sierra Club	NRDC/Sierra Club
OptiSolar	OptiSolar
Powers Engineering	Powers
Sacramento Municipal Utility District	SMUD
San Diego Gas and Electric	SDGE
Sea Breeze Power	Sea Breeze Power
Sempra Generation	Sempra
SkyFuel	SkyFuel
SolarMission Technologies	SolarMission
Southern California Edison	SCE
Vulcan Power Company	Vulcan
Wind Industry (Dariush Shirmohammadi)	Wind Industry
Consolidated Environmental Comments (by Sierra Club and NRDC)	Consolidated Environmental
California Desert Coalition	
Center for Biological Diversity	
Center for Community Action and Environmental Justice	
Defenders of Wildlife	
Desert Conservation Institute	
Friends of Panamint	
Mojave Desert Land Trust	
National Parks Conservation Association	
Paul Smith	
Sidney Silliman	
Sierra Club (John Taylor)	
Sierra Club (Mojave Group/San Geronio Chapter)	
Vesuvio Corporation	
Wilderness Society	
Wildlands Conservancy	

## 2.2 Objective

The objective of this document is to identify and discuss comments made on the draft report, address questions from parties submitting comments, and discuss the changes made to the report to incorporate the stakeholder comments and ideas.

## 2.3 Approach

Black & Veatch reviewed all comments provided and has responded to the major comments in this document. Several parties also submitted comments addressing policy issues regarding the role of RETI and the use of RETI information. These comments will be addressed by the RETI Coordinating Committee.

## 2.4 Report Organization

In addressing stakeholder comments, Black & Veatch has aggregated these into subject areas consistent with the organizational structure of the draft report. Comments are grouped by category. The comments are discussed below, as well as being reflected in the attached Draft Final Phase 1A Report.

Following this Introduction, this report is organized into the following sections:

- Section 3 – Methodology
- Section 4 – Assumptions
- Section 5 – Technology Characterization
- Section 6 – Resource Screening
- Section 7 – Phase 1B Scope of Work



## 3.0 Methodology

Several parties submitted comments on the methodology section of the draft report, including Base Case Definition assumptions, Environmental Considerations, Resource Valuation, Future Cost and Performance Projections, and CREZ Identification and Ranking. These comments are discussed below.

LePena Law Corporation submitted comments on behalf of several Indian tribes, noting that RETI should consider impacts on Indian lands and environmental concerns in the analysis. Given the similarity of issues LePena identifies with those identified by the Environmental Parties, the comments have been addressed in Section 3.5, Environmental Considerations.

Several parties commented that they would like to review the economic models used for Phase 1B. These will be made available for stakeholder review and comment.

### 3.1 RETI Phase 1 Methodology Overview

There were a few high-level comments on the overall RETI methodology. The Environmental Parties were generally concerned about the perceived low-level of importance of environmental issues in the draft report. They suggested numerous changes which have been implemented and are discussed throughout this report. One of these was to indicate the input of environmental factors into the resource screening and CREZ ranking process in Figure 3-1, Overview of RETI Phase 1 Methodology. This has been reflected in the updated report.

Several parties commented on the danger on relying on analysis which may have false precision. This topic is further discussed in the CREZ Identification and Ranking section of this report.

### 3.2 Base Case Definition

Several parties commented on the base case definition, which specifies which generation resources and transmission resources are assumed to be built.

#### ***Renewable Generation Resources***

Vulcan Power Company proposed their Green Borders Project in Northern Nevada be included in the base case, as it is close to meeting all the criteria for including resources in the base case. The determination of which projects will be in the Phase 1 base case has not been performed yet, and Black & Veatch will identify these projects in Phase 1B. To the extent that Vulcan and other resources meet the criteria, RETI will include these in the base case.

### ***Transmission Resources***

GEA, Vulcan and the Environmental Parties commented that the criteria for transmission to be included in the base case needs to be stricter, such that projects that are in the base case are essentially limited to existing and under-construction transmission rather than including “very high probability” additions. This issue has been discussed extensively and Black & Veatch had deferred to the Coordinating Committee for guidance on the Phase 1A assumption. As such, the definition for the base case has not been changed in the report, but some of the specific concerns can be addressed in other ways.

One argument raised for a more strict base case definition is that if too much transmission is erroneously assumed to be built, then RETI may underestimate the need for new additions. Black & Veatch agrees this is possible, and recommends that this can be readily addressed by advancing more than the bare minimum number of CREZs and associated transmission to Phase 2. Further, as RETI is a continuing process that will likely be revisited in a few years, the status of proposed projects can be easily monitored and the analysis redone if the situation changes.

Vulcan also suggests that the costs for any transmission projects in the base case that are not yet “sunk” be included in the analysis. Black & Veatch agrees this information would be valuable to present, and it will be included in an alternative tabulation of resource costs in Phase 1B.

Vulcan questioned whether non-ISO transmission that is under development will be included in the base case. Black & Veatch will use the same criteria for including non-ISO transmission in the base case as it uses for the ISO transmission.

### **3.3 Resource Assessment and Project Identification**

Several parties provided comments about the resource assessment and project identification process.

The Environmental Parties stressed that more detailed environmental screens should be applied than what was used in the high-level resource assessment described in Section 5 of the draft report. Black & Veatch agrees that this is necessary for identifying specific resource locations, and these will be developed jointly with the EWG in Phase 1B.

The Alliance for Responsible Energy Policy (AREP) expressed concern that RETI will not include local generation, energy efficiency and distributed energy options. AREP provided supplemental comments on March 27, 2008 that specifically addressed rooftop solar photovoltaic, which is also a distributed, local renewable resource. In

addition, some individual environmental organizations expressed a similar preference for local, distributed generation resources.

RETI will not ignore these resources, but they are not the focus of study. The goal of RETI is to identify the large-scale transmission needs of the state to meet a 33 percent RPS target. There are several other processes, policies and incentives that already recognize the benefits of distributed energy and energy efficiency. However, there has been no coordinated effort to date to assess large-scale transmission needs. RETI has established a minimum size threshold for considering renewable resources at 10 MW. This is not a bias against smaller resources, rather is a practical limit required for purposes of this analysis. RETI recognizes that there are many potential small renewable resources which could be developed and interconnected on the distribution system, such as anaerobic digestion, which has significant potential and is typically less than 5 MW.

RETI intends to account for distributed resources in its determination of renewable resource requirements to meet the 33 percent goal. The distributed renewables that will be accounted for are: solar installations under the California Solar Initiative (CSI), the smaller renewables that will not be fully characterized in Phase 1B (anaerobic digestion, landfill gas, hydro, wave, and marine current), and renewable energy included in utility resource filings as “distributed renewables”. While individual project sites will not be identified (as with the other renewables), the potential generation from the smaller resources will be used to determine the RETI “net short” – the additional amount of development necessary to meet the state’s 33 percent RPS target.

### **3.4 Technology Characterization**

No comments were received on this general section. Comments were received on individual technologies, as discussed further in Section 5.

### **3.5 Environmental Considerations**

Many parties commented on the inclusion of environmental considerations in the report. Most of these comments were aggregated by the Sierra Club and Natural Resources Defense Council (NRDC), jointly referred to here as the “Environmental Parties.” The primary concern is that RETI is not adequately considering environmental factors in the resource assessments, resource ranking, and in CREZ development. In particular, there is a need to include environmental screening criteria in resource assessment. The Environmental Parties also proposed methodological revisions to include a yet-to-be-defined environmental ranking of each project. Or CREZ Finally, the

Environmental Parties provided detailed comments on individual resource technologies. These comments are addressed in Sections 5 and 6.

As noted in the Section 1 above, the SSC established the EWG with the charter to develop these criteria and advise the SSC and Black & Veatch on the methodology to integrate this in the Phase 1 analysis. Black & Veatch will incorporate the environmental screening criteria and methodology into the RETI resource assessment and CREZ development process once it has been developed by the EWG and approved by the SSC.

The revised Black & Veatch scope of work for Phase 1B will require extensive collaboration with the EWG. Specifically, Black & Veatch will work with the EWG in the resource assessment portion of Phase 1B to:

- Identify detailed generation and transmission resource exclusion zones as applicable by technology. Maps will be prepared in GIS format. It is expected that the zones will include, but not be limited to: national/state parks, protected areas, culturally sensitive zones, high slope areas, some military lands, water, wetlands, urban areas, airports, sensitive habitats, etc.
- Identify appropriate water availability assumptions and technology application (i.e., wet vs. dry cooling)
- Identify a definition for sustainable biomass fuels to use in assessing biomass fuel availability
- Review appropriate emissions control technology and allowances/offsets for biomass
- Identify other environmental considerations relevant to generation and transmission siting, as advised by the Environmental Working Group

The Environmental Parties also commented that not enough information is in the draft report to assess the environmental impacts of the technologies. Black & Veatch will develop this information in Phase 1B to characterize potential projects or resource classes. In particular, Black & Veatch will develop estimates of environmental characteristics including:

- Land use
- Water use
- Where possible, identification of the affected sensitive species, such as bird and bat populations, or endangered species (this will be done based on GIS-information developed by the Environmental Working Group and the proposed project location)
- Air emissions

These will be provided for all projects /resources classes identified in Phase 1B.

It has also been proposed that the EWG develop environmental criteria to include in the CREZ ranking process. This would allow environmental impacts to be assessed similar to the resource valuation process proposed for economic ranking. Black & Veatch will work with the EWG and the SSC to include such considerations.

LePena Law Corporation submitted comments on behalf of several Indian tribes, noting that RETI should consider impacts on Indian lands and environmental concerns in the analysis. Given the similarity of the issues LePena identifies to those identified by the Environmental Parties, Black & Veatch recommends the EWG consider the issues and proposal developed by LaPena into its deliberations.

### **3.6 Transmission Methodology**

Comments were received on several aspects of the transmission methodology, including assumptions of out-of-state transmission availability and costs, consideration of contractual transmission rights, coordination between RETI and CAISO proceedings, transmission development timing, and transmission and wheeling costs.

#### ***Out-of-State Transmission***

SMUD and Vulcan commented on the draft report assumptions regarding out-of-state transmission availability and costs. SMUD seeks clarification regarding how RETI will assess out-of-state transmission availability, and how RETI will assess the need to build additional transmission to access these resources. Vulcan commented that the assumption that 500-kV transmission lines would be required to access all out-of-state resources would not be appropriate in all circumstances.

In RETI Phase 1, Black & Veatch will model out-of-state resources on a regional CREZ level rather than at an individual project level, with high voltage transmission required to deliver this energy to the California grid. As there is a very high utilization on the high-voltage transmission in the Western U.S., RETI will assume that all out-of-state generation will require incremental transmission capacity. Black & Veatch notes this approach is appropriate for the Phase 1 CREZ identification, but Phase 2, which is anticipated to consider individual out-of-state resources, will require substantially more refinement in the out-of-state transmission assumptions.

Black & Veatch agrees with Vulcan that resources located outside of California that are able to deliver energy directly to the CAISO grid or to California utilities should not be assessed an out-of-state transmission cost. For transmission interconnection purposes these will be considered California resources.

### ***Contractual Transmission Rights***

SMUD questioned how RETI will consider contractual transmission rights when determining transmission availability. Black & Veatch believes this is an important consideration in the determination of available transfer capability, and will be considered in Phase 1B.

### ***Coordination with CAISO Proceedings***

Vulcan sought clarification regarding how the RETI will be coordinated with CAISO proceedings, including the Location Constrained Resource Interconnection (LCRI) and the Generation Interconnection Process Reform (GIPR).

The RETI is designed to identify the transmission necessary for California to achieve its renewable energy goals in the most cost-effective and environmentally sensitive manner possible. The results of RETI are expected to inform the CAISO planning processes, including the GIPR, LCRI and 2009 Transmission Plan. How the RETI information will be specifically used in the CAISO processes has yet to be determined, but Black & Veatch is working closely with CAISO planning staff to integrate the RETI and CAISO processes.

Vulcan also expressed concern regarding the treatment of transmission costs for resources that currently have a CAISO assigned upgrade cost. Black & Veatch appreciates that some resources may have CAISO-assigned interconnection costs, and it would be inappropriate to use both the CAISO cost and the proposed RETI transmission cost. This will be considered when identifying individual resources in Phase 1B.

### ***Transmission Development***

SMUD commented that given the time required to site, permit and build transmission, the value of conducting the RETI near and mid-term analysis is questionable. SMUD also expressed concern that RETI would result in a plan with a bare minimum of transmission for renewable resources and recommended the plan add significantly more transmission than that the minimum required to meet a 33 percent RPS target. This would allow for flexibility to procure higher quantities of renewable resource, promote competition among renewable resources and allow for regional power needs to be met.

Transmission development is a long process and SMUD is correct that it will be difficult to develop substantial transmission in the near or mid-term. A primary value of RETI is to identify the developable renewable resources, taking into consideration the timeframe in which the resources may be developed. The purpose for conducting the

short and mid-term analysis is to identify renewable resources that may not require significant transmission additions, such as solar photovoltaics and biomass.

RETI anticipates that Phase 1 will identify and prioritize transmission capacity substantially in excess of that required to meet the 2020 RPS goals for the reasons identified by SMUD, as well as accounting for uncertainty that resources will be proposed and constructed as envisaged. While no specific quantitative targets have been identified for transmission recommendations, Black & Veatch suggests that substantially more capacity be recommended for RETI Phase 2 analysis than would be required to meet the 2020 RPS target.

### ***Economic Benefits of New Transmission***

Vulcan commented that the RETI should value the quantifiable economic benefits of new transmission such as reduced congestion. Black & Veatch agrees that transmission added for renewable resource will provide other benefits to the transmission system and the electric market. Identifying all of the benefits will require detailed load-flow modeling similar to that used in the CAISO transmission planning process. Such modeling is anticipated in RETI Phase 2.

### ***Transmission Costs***

The Wind Industry commented that the discussion of transmission costs in the draft report was vague, and both the Wind Industry and Vulcan addressed wheeling costs.

In the draft report, Black & Veatch presented a general approach to transmission costing. This is necessarily vague, as the cost of transmission required to access a CREZ will be specific to that CREZ. Until the CREZ has been identified and quantified, the transmission requirements cannot be determined. Black & Veatch has identified the major categories of costs that may be required to interconnect renewable resources to the grid.

Wheeling costs include the variable cost to transmit power from the facility to the energy delivery point. These are assessed by the transmission owner, or in the case of CAISO interconnected resources, by the CAISO. RETI Phase 1 will assume that all California resources will have wheeling charge equivalent to the current CAISO Transmission Access Charge (TAC). The wheeling costs assigned to out-of-state resources will include the projected costs to transit power across the interconnecting transmission owners' power lines, the CAISO TAC, and other wheeling charges that may be required to deliver energy from the CREZ to the CAISO grid. In instances where a generator is located outside of California but capable of delivering the power directly into the California grid, it would only be assessed the California TAC.

### 3.7 Resource Valuation

Several parties commented on resource valuation costs. Most of these were on the capacity cost valuation, which is discussed below. SkyFuel requested “that some additional text be included about the shortcoming of supply curves that are only based on bus bar production costs such as those in the Arizona report”. Black & Veatch notes the resource valuation methodology used in RETI, described in the draft report includes both the cost of resources and the capacity and energy benefits of generation based on the generation profile.

#### ***Capacity Value***

Several comments were received on capacity value, including the proposed value of capacity and the methodology used to develop the capacity benefit for resources in the resource valuation process.

The Customer Group comments on the capacity value methodology, proposing the value of capacity should represent the difference between the market value of energy and the estimated marginal cost of that energy. This is similar to the approach proposed in the CPUC demand response proceeding.<sup>1</sup> There are several potential approaches to developing a value of capacity, depending on the use, goal and timeframe for the resource valuation. The capacity value used in RETI is designed to reflect the value that the resources owner (or contract owner) receives (or claims) for providing reliable capacity to the grid on a forward-looking basis. As such, it is appropriate to use the CPUC Resource Adequacy value of capacity methodology for RETI.<sup>2</sup>

Several parties commented that the proposed capacity cost, developed by the CEC in its 2007 CEC Cost of Generation analysis, overstate the real cost of a simple cycle gas turbine. Black & Veatch has reviewed the CEC assumptions and believes the CEC costs are within the range of gas turbine cost estimates. As no alternative costs were provided, Black & Veatch recommends using these values for Phase 1.

#### ***Energy Value***

Vulcan commented that the energy value modeling should be consistent with the proposed CAISO MRTU nodal pricing methodology. Black & Veatch agrees that nodal pricing would provide more refined set of energy costs, but it is premature to consider this in Phase 1B since the MRTU has yet to be implemented by the CAISO. Using a model with nodal pricing should be considered in future RETI analysis.

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<sup>1</sup> R.07-01-041

<sup>2</sup> 2006 Resource Adequacy Report, CPUC Staff, Feb, 2007.  
[http://docs.cpuc.ca.gov/word\\_pdf/REPORT/64402.doc](http://docs.cpuc.ca.gov/word_pdf/REPORT/64402.doc)



### ***Integration Costs***

SCE, the Customer Group, Vulcan, and Calpine all recommended that integration costs should be considered in the Phase 1 RETI analysis. The Customer Group proposed that a recent integration analysis completed for the Texas ERCOT may be used as a basis for developing integration costs, but notes that more analysis is needed.

The draft report discusses how integration costs are an important economic consideration in large-scale renewable development and should be included in the RETI resource analysis, either in Phase 2 or an update of Phase 1. To date however, there are no reliable cost assumptions available for determining the costs of integration in the California electric system. Black & Veatch has reviewed the studies conducted for other grid control areas systems and believes that using costs developed for a different electric system with different resources and load profile as a proxy for the costs for the California system would be misleading and fraught with errors. Black & Veatch maintains its original recommendation that no integration costs be included in RETI until a more robust assessment of the cost of California renewable integration is available. If such an assessment becomes available during the Phase 1B, it will be considered.

### ***Economic Benefits of New Transmission***

Vulcan commented that the RETI should value the quantifiable economic benefits of new transmission such as reduced congestion. Black & Veatch agrees that that transmission for renewable resources will provide other economic benefits to the grid and energy market. Properly quantifying these benefits will require load flow modeling, which is anticipated in Phase 2.

## **3.8 Future Cost and Performance Projections**

No comments were specifically received on this section. However, a few solar stakeholders described expected improvements in technology performance and cost for different technologies. This is addressed in Section 5. .

## **3.9 Supply Curve Development**

No comments were received on this section.

## 3.10 CREZ Identification and Ranking

### ***CREZ Methodology***

The Wind Industry provided extensive comments on RETI methodology, including the process for developing CREZs, and proposed a modified approach to the Black & Veatch methodology. Specifically, the Wind Industry recommends that RETI use a statistical approach to project ranking and CREZ ranking, explaining that this approach was more valid given the inherent uncertainty regarding forecasted assumptions. Several other parties echoed this concern. The Wind Industry also proposes that project commercial operation date should not be a consideration in CREZ identification; rather, this should be considered when transmission is proposed to access a defined CREZ. Finally, the Wind Industry recommends RETI should not consider environmental issues in CREZ development. They believe this should be considered independently.

Black & Veatch appreciates the thought and consideration the Wind Industry has put into its proposal, but believes that if is not implemented correctly the proposal will stymie rather than effectuate the goals of RETI. Regarding the statistical analysis for resources and CREZs, this would require not just a single set of assumptions, but development of multiple assumptions for each input. Simply developing and seeking consensus for this data set would require months, substantially delaying the RETI process. Further, the development of a set of probabilistic data for each assumption will result in a set of assumptions that are confusing and inconsistent. As an example, consider wind resource costs. Black & Veatch has proposed a range of costs to reflect the wide variability in wind resource, turbine efficiency and development costs. In Phase 1B Black & Veatch will use site-specific assumptions rather than the whole range of potential wind costs. If a potential cost range were developed for each resource, there would be sufficient overlap among resources that developing any reasonable project ranking might be impossible. Further, in an evenly distributed cost range for resources, if one chose to use the mean value for project ranking, this would effectively be the original point values proposed by Black & Veatch. While there are risks in its implementation, Black & Veatch agrees that it is very important to consider the uncertainty in the estimates used to value resources. By their very nature, these estimates include a margin of error. It would not be prudent to eliminate potential CREZ's from consideration if the difference in their ranks is 5 percent, but the margin of error is 20 percent. For this reason, we agree that some method needs to be developed to assess the impacts of uncertainty on the ranking process. Black & Veatch looks forward to working with

stakeholders in Phase 1B to develop the details of a ranking protocol that recognizes uncertainty, but also protects clarity of information and process efficiency.

The Wind Industry proposed that timing should not be used to develop CREZs; rather, the timing should be considered in developing transmission plans to access defined CREZs. This undermines a fundamental goal of RETI, which is to prioritize the development of transmission. A key component to RETI is identifying those resources that are available to meet RPS goals, *including* annual RPS targets. This realistically limits potential resources to what will be reasonably available in the different timeframes. Developing a resource potential for the state and then working backward to achieve the RPS goals is not likely to lead to the most cost-effective development approach.

Finally, the Wind Industry proposes that environmental considerations occur outside of the project and CREZ ranking process. Environmental considerations are an integral part of the RETI, and the SSC has affirmed these will be included in the ranking process. Beyond this, environmental restrictions are real and binding constraints to development in many locations, and ignoring the limitations would likely result in meaningless CREZs, as resource development in these areas would be impossible.

### **CREZ Size**

Several parties commented on potential CREZ size. SCE expressed concern that the CREZs would be too large to be meaningful for transmission planning, and RETI should be very specific in CREZ designation. Conversely, the Wind Industry and CWEA/CBea/CSP urge RETI to consider “large areas” for CREZs, with the goal to identify just the backbone transmission requirements necessary to reach this area. The Wind Industry also commented that RETI should consider only potential CREZs, or P-CREZs, but does not define how these would be determined.

The development of CREZs is based on physical, economic and timing considerations. There is no preconceived CREZ size. While there is no upper limit on the size of the CREZ, it is anticipated that the effective limit to the size of a CREZ will be governed by the ability to add transmission at various costs. Further, regardless of the aggregate CREZ size, each in-state CREZ will be composed of individual projects whose specific geographic location will be identified as part of the Phase 1B project identification process.

## 4.0 General Study Assumptions

Parties provided comments on Section 4 of the draft report, including comments on the economic assumptions, financial assumptions, and renewable energy demand.

### 4.1 Economic Assumptions

Several parties, including Vulcan, First Solar and the Wind Industry commented that using consistent economic and financing assumptions for all developers and technologies does not adequately represent the actual development capabilities of individual developers or the risk profiles of different technologies. Black & Veatch agrees that having more refined information would improve the analysis. That noted, each project will have different risks and each developer will have different financing opportunities based on its unique financial position. None of the parties provided alternative economic assumptions for all renewable technology types. It is highly unlikely that RETI will be able to collect this information; hence Black & Veatch proposed a set of economic assumptions that are reasonable for medium-sized renewable energy developer.

### 4.2 Renewable Energy Financial Incentives

SMUD commented that it seeks to insure that the RETI methodology includes a “toggle” to allow model users to enable or disable the renewable incentives to allow for sensitivity analysis showing the impact of including / excluding financial incentives. As part of the Phase 1B, Black & Veatch will deliver a spreadsheet model that includes this option in the model and will provide user documentation regarding how this may be used. RETI Phase 1B will include in the base case an assumption that all current renewable incentives (or equivalent) are maintained through the forecast horizon.

### 4.3 Renewable Energy Demand

#### ***California CSI Assumptions***

Comments were received from a couple of parties related to the assumptions for the California Solar Initiative (CSI). Specifically, comments questioned why only half of the CSI goal (1500 MW of 3000 MW) is included in the RETI renewable resource demand determination.

Black & Veatch notes that RETI is not modeling or assessing the CSI program. RETI’s only use for the CSI assumption is in determining the total California renewable

resources necessary to meet the state's 33 percent renewable resource goal. The CSI program may generate renewable energy credits (RECs) that could potentially be used by utilities to demonstrate compliance with the RPS. RETI assumes that the entire CSI goal is met, and approximately half of the RECs generated by the CSI will be used by utilities to qualify for their RPS programs.

### ***Regional Renewable Resource Demand***

Several comments were received from parties regarding out-of-state resource assumptions. The Customer Group and SMUD both expressed concern that RETI was assuming out-of-state resources would be available to California for RPS compliance without consideration of local demand for those resources.

It is important to consider renewable resources located outside of California for several reasons: first, RETI is developing assessments of resources that **could** potentially deliver energy to California for RPS compliance in order to determine the viability and cost of achieving the RPS goals. Second, there are currently several out-of-state renewable resource contracts, and market participants are proposing additional non-California resources for achieving the California RPS. Third, several proposed projects would bring out-of-state resources to California, including proposals for resources from British Columbia, Baja, California and as far east as Montana.

Although out-of-state resources should be considered, RETI recognizes that other states have their own RPS requirements and goals and will require renewable generation to achieve this. RETI will consider the effects of the local demand on resource availability. RETI anticipates coordinating the RETI program with the Western Governors Association's Western REZ initiative. This initiative is designed to develop a comparable analysis of resources and transmission throughout the WECC. The final results of the WREZ may not be available to RETI in the Phase 1 time frame, but RETI anticipates the results of this initiative will be included in future RETI phases.

In addition to local demand, the CAISO commented that there is limited available capacity on the CAISO bulk power system to import renewable energy from resources outside of California. Further, it is unlikely that significant new transmission transfer capability would be developed in the study period if the transmission resources are not currently under active development. The CAISO proposed that total new capacity for renewables be limited to 2,500 MW from the Pacific Northwest (Oregon, Washington, British Columbia), and 2,500 MW from the Southwest (Arizona/Nevada). To that end, RETI believes it is reasonable to incorporate the CAISO-proposed transfer limits for out-of-state resources in the Phase 1 analysis.

## 5.0 Technology Assumptions

Several parties commented on the RETI technology assumptions, including general comments on the types and costs of resources included, and substantial comments on specific technology assumptions including Biomass, Solar Thermal, Solar PV, Hydroelectric and Wind resources.

### ***General Comments on Technology Assumptions***

Several parties provided general discussions of the technology cost assumptions. On technology costs, SCE commented that the technology costs are not representative of the bids they have received in their RFO, but did not provide alternative assumptions. The goal in RETI is to use the most current and dependable costs for each technology, and Black & Veatch has developed its proposed costs based on its knowledge of the renewable market and the projected installed costs for renewable resources. RETI encourages all parties in the RETI process to work with Black & Veatch to develop accurate and appropriate costs and technology characteristics. Lacking specific data based on real costs, however, we do not recommend changing the resource assumptions except for a couple of specific cases, discussed later.

The Alliance for Responsible Energy Policy (AREP) expressed concern regarding the lack of environmental considerations for different technologies. The RETI SSC has chartered the EWG to consider environmental criteria in the analysis, and Black & Veatch encourages AREP to participate in this process to ensure its concerns are addressed in the analysis. AREP also expressed concern that RETI will not include local generation, energy efficiency and distributed energy options in their original comments of March 25, 2008. AREP provide supplemental comments on March 27, 2008 that specifically addressed rooftop solar photovoltaics which have been identified as distributed, local renewable resources. RETI considers “local” generation to the extent that it identifies potential renewable resources in load areas. That said, the focus of RETI is not to develop a comprehensive resource plan to meet California requirements, rather it is intended to identify the transmission required to access large scale renewable development. RETI will account for local and distributed renewable resources in its demand assessment. These resources are not the focus of RETI, however, as distributed generation, local resources and demand reduction will likely not require additional transmission.

SCE commented that the Phase 1A report should identify resources on a more granular level, including specific resources and identifying specific resource areas. Black & Veatch feels that there are numerous tables and figures in Section 6 that do provide this

information for each of the resources. However, Phase 1A has not compared the locations yet on environmental and economic merits. This will be performed in Phase 1B.

SMUD requested that the technology potential by resource and location be defined in GWh as well as MW. This is included in the revised Phase 1A Report

## **5.1 Solid Biomass**

Several comments were received from the Biomass Industry on the technology assumptions used in the draft report. A comment was also received from the Environmental Parties.

The significant comments from the Biomass Industry related to the following issues:

- Accelerated depreciation only applies to a portion of the plant
- Net plant heat rate should include a larger range
- Capacity factor range should be 80 to 90 percent (instead of 70 to 90 percent)
- Total project cost range should be slightly smaller
- Fixed O&M cost should be higher
- Environmental impacts of biomass can be net positive

These comments were integrated into the report document except for the capacity factor assumption and fixed O&M assumption. While Black & Veatch agrees that higher capacity factors are possible, based on our assessment of data from the Ventyx Energy Velocity database, the 70 to 90 percent range is more appropriate for a 20-year average capacity factor assumption.

For fixed O&M, it is difficult to compare numbers without knowing the basis for the assumption. Black & Veatch will work with the Biomass Industry in Phase 1B to ensure a consistent approach to estimating O&M costs.

The Environmental Parties commented on their concerns about using forest thinnings as a biomass resource. In Phase 1B, Black & Veatch plans to coordinate with the Environmental Working Group and biomass interests to ensure the resources included in the project identification process are environmentally sound.

## **5.2 Anaerobic Digestion**

No comments were received on this section.

### 5.3 Landfill Gas

No comments were received on this section.

### 5.4 Solar Thermal

This section drew many comments. The costs and performance specified in the report, as well as the technology chosen, were the source of most of the comments.

#### ***Trough as Proxy Technology***

BrightSource objected to the selection of trough as the proxy for all solar thermal technologies. The selection of solar trough is not intended to identify trough as a “winning” technology and assume other technologies would not be successful, nor was it to suggest that other technologies are not commercially viable. Ausra, Stirling Energy Systems, and BrightSource all have PPAs with California IOUs. While these technologies appear to be commercial *viable*, they are not yet commercially proven at a utility scale. Black & Veatch believes the report properly suggests that parabolic trough is *not* the only technology commercially viable within the RETI timeframe, and in fact suggests that other solar thermal technologies will become commercially available during the RETI timeframe. However, in the report Black & Veatch has chosen not to speculate on the future costs or performance of emerging technologies. Black & Veatch believes that for the purpose of RETI, assuming a single conversion technology is appropriate. As with other assumptions about technology development and future costs, this assumption can be revisited as the RETI process continues in the future.

#### ***Storage***

Sky Fuel commented that storage should be included in the proxy solar thermal technology. As the report pointed out, several trough plants are currently under construction in Spain, and Abengoa recently announced a PPA with APS for a 280 MW plant with 6 hours of storage. Solar thermal plants with storage will have increased capital costs, but will also have increased generation and increased capacity value.

While Black & Veatch believes that future solar thermal plants will most likely include storage, the costs and performance of these plants are not well known. In addition, the pathways for integrating storage for some of the other solar thermal technologies discussed in the report are not clear. Using a solar trough without storage as a proxy for all solar thermal technologies remains appropriate for the purposes of RETI. Storage could be considered, however, in an alternate scenario to see if the economics of CREZs change if storage is included with solar thermal technologies. As with other



assumptions about technology development and future costs, this assumption can be revisited as the RETI process continues in the future.

### **Costs**

First Solar commented that solar trough costs did not match Black & Veatch's 2007 report for the three Arizona Utilities. That report assumed the first solar trough plant constructed in 2010 would cost \$4,200/kW without storage. Plants constructed later added storage and decreased in cost. The costs proposed in the draft report are in line with the Arizona report.

In reviewing costs, Black & Veatch believes the capital cost range used in the draft report should be \$3,800 to \$4,800 to account for increased costs due to dry cooling and other site factors. The report has been updated to reflect this.

### ***Wet versus Dry Cooling***

Several parties commented on the cost and performance of dry cooling for solar parabolic troughs. Black & Veatch had assumed that limited water as well as permitting requirements would require the majority of solar thermal plants to use air cooling. The first two solar thermal projects to file for AFC's in California both proposed air cooled condensers (dry cooling). Since the draft report was filed, FPL Energy has filed an AFC for a wet cooled trough (the Beacon project).

The CEC has stated it will approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound."<sup>3</sup> This may occur in certain locations. Black & Veatch will therefore revise the Phase 1A report to assume both wet and dry cooled projects could be built, based on environmental criteria and availability of water. Black & Veatch will look to the CEC and the EWG to provide guidance on water availability for solar thermal plants.

Powers Engineering had detailed comments regarding the cost and performance of dry cooled solar thermal trough plants. Powers Engineering recommended that \$500/kW be added to the capital cost of solar thermal troughs to account for the additional cost of the air cooled condenser, and that the performance of these plants should be designed for 115 °F.

Black & Veatch estimates that dry cooling increases the capital cost of solar plants by as much as \$130/kW for a 200 MW plant. The incremental capital cost of dry vs. wet cooling is roughly 3-4 percent. Dry cooling decreases the output of these plants depending on the temperature profile of the location. This decrease (compared to wet

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<sup>3</sup> CEC, 2003 IEPR

cooled plants) can range from 8 to 10 percent depending on the climate. Much of this decrease will occur in the summer months, which will decrease the energy and capacity value of the plant. In Phase 1B, Black & Veatch will ensure that the performance profiles of solar thermal projects reflect the type of cooling selected for the project.

In prior work, Black & Veatch had modeled an air cooled condenser for a dry cooled solar trough plant at Daggett, California (near Barstow, where many of the current SEGS plants are located). The initial temperature difference (ITD) used was 40 °F. The system was designed for an ambient temperature of 105 °F. Meteorological data from Dagget shows that the temperature rarely climbs over 115 °F. According to these data, it has been over 115 °F for only 8 hours in a 10 year period. Black & Veatch disagrees with designing dry cooling for 115 °F, and believes a 105°F design point to be appropriate.

## **5.5 Solar Photovoltaic**

Two parties (OptiSolar and First Solar) commented that Black & Veatch should assume thin film technology with a declining capital cost instead of the crystalline system chosen in the report. First Solar asserts several points in support of its lower price: (1) SCE's recent announcement of 250 MW of distributed PV at \$3,500/kWp (\$5,000/kWe), (2) First Solar's Blythe PPA announced by SCE and signed below the Market Price Referent, and (3) their cost of module production at \$1,120/kWp (\$1,454/kWe).<sup>4</sup>

Black & Veatch is not assuming that all utility scale solar PV constructed in the RETI timeframe will be tracking crystalline. Black & Veatch chose the technology to be representative of all PV technologies. Black & Veatch believes the cost of energy and land use of these technologies are similar.

Capital costs in the photovoltaic industry have significant potential to decrease, however, and there is considerable commercial interest in utility-scale thin film systems. An "alternate scenario" was proposed in the report (Section 3.8) to test lower future solar costs. Black & Veatch will run this scenario for thin film photovoltaic systems with a capital cost of \$2,700/kWe to \$3,500/kWe. This is based on module costs of \$1,500/kWe to \$1,700/kWe and "balance of system" costs of \$1,200/kWe to \$1,800/kWe.<sup>5</sup>

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<sup>4</sup>The nomenclature used by the solar industry can be confusing. Most solar costs are quoted in \$ per watt "peak" or "dc" (shown as kWp). This is the peak rating of the solar module, and does not take into account derating due to wiring loss, inverter efficiency, temperature and other factors. To accurately compare to other technologies, an "ac" rating should be used (kWe). This derate factor ranges from 77 to 85 percent, depending on the photovoltaic technology and location. All of the costs for other technologies in the RETI report are quoted on an ac basis. Black & Veatch understands SCE's \$3,500/kWp to be equivalent to \$5,000/kWe, based on their stated 10 percent uncertainty adder and a 77 percent derate.

<sup>5</sup> These module costs are based on First Solar's 2010 target production cost of \$0.90/watt(dc). Balance of System includes inverters, installation, mounting systems and site costs.

OptiSolar commented that the 20 MW size chosen for photovoltaic plants was too low. Black & Veatch is using the 20 MW size as a “building block” and areas may have several 20 MW plants. The 20 MW size was not intended to be a limit on the size of photovoltaic development in any given location.

## **5.6 Hydroelectric**

The Environmental Parties asked that the environmental impacts of new dam construction be compared to retrofits of existing dams (incremental). The resource assessment section of the report is restricted to upgrades of existing sites or adding generation to dams that currently do not have generation. No new dams are included. .

## **5.7 Wind**

The Wind Industry commented that hub heights for wind turbines are now commonly 80 meters and in some cases higher. They suggest using 100 meters as a minimum hub height. Black & Veatch proposes to use 80 meters, as it is still the more common height for commercial installations. Black & Veatch agrees with the Wind Industry that the latest wind maps, which may show wind speed at 70 and 100 meters, will be used for the region of study. Black & Veatch also confirms that wind maps do not substitute for on-site wind measurement; however, this data is generally not publicly available. Black & Veatch looks forward to working with stakeholders to identify additional commercially viable regions that may not be indicated on the wind maps.

The Wind Industry raises the valid point that storage can improve the economics of wind (and other resources) in certain situations. Black & Veatch agrees. The Phase 1B scope includes the following: "Opportunities to use energy storage or combine projects have complementary output profiles (wind and solar in some areas) may be evaluated for special CREZs if initial economic calculations appear promising. This will be done on a case-by-case basis, and only when there appears to be an obvious economic driver."

## **5.8 Geothermal**

The GEA, in conjunction with Calpine and Vulcan, submitted comments on the geothermal technology and resource sections, as well as numerous other areas of the report. Technology comments are discussed here. The Environmental Parties also requested additional information on the environmental impacts of geothermal plants.

Calpine suggests that dry steam technology, such as employed at Geysers, be added to the report. This change has been incorporated.

The GEA, and specifically Vulcan, suggested that the capacity factor assumption in the draft report (70 to 90) percent was too low, suggesting an alternative value of 95-100 percent for new projects over a 30 year life. Although Black & Veatch agrees that higher capacity factors are possible, based on our assessment of data from the Ventyx Energy Velocity database and other sources, the 70 to 90 percent range is more appropriate for a 20-year average capacity factor assumption for binary cycle plants. For example, the average capacity factor (based on summer nameplate capacity) for all geothermal projects in the U.S. from 2001 to 2006 has been 80 percent. Black & Veatch also reviewed the same data to see if plant age had an impact on capacity factor. The average capacity factor for projects that have come on-line since 1990 is also about 80 percent. Finally, Black & Veatch reviewed the capacity factors for new geothermal contracts that have been approved or are pending before the CPUC. The average of these capacity factors is 87 percent, with values ranging from 80 percent to 95 percent.

The capacity factor in the report is for a binary cycle project, and this has been clarified. It should be noted that, as with solar thermal plants, air-cooled geothermal plants are particularly susceptible to reduced output during hot summer days, which reduces annual capacity factor. Water-cooled and flash-based geothermal plants should be expected to have higher capacity factors than dry-cooled binary cycle. Rather than assuming a single capacity factor assumption applicable to all projects, specific capacity factors will be determined for each geothermal project in Phase 1B. These assumptions will continue to be reviewed with the geothermal industry.

The geothermal industry also commented that the operation and maintenance cost assumption appeared too high based on their estimates; however this estimate did not include ongoing capital expenditures (e.g., well replacements and turbine overhauls), whereas the Black & Veatch assumption for Phase 1A does. Black & Veatch will continue to work with the geothermal industry in Phase 1B report to refine the operation and maintenance cost estimates.

The Environmental Parties requested additional data on land use, air emissions, and other environmental impacts for geothermal projects. This data will be developed for each project / resource class in Phase 1B.

## **5.9 Marine Current**

No comments were received on this section.

## **5.10 Wave**

No comments were received on this section.

## 6.0 Resource Screening

Comments were received from several parties on the resource assessment and screening section of the report. In addition to specific comments on the resources, general comments were also made regarding out-of-state resources and environmental considerations. These are discussed first in this section followed, followed by responses to the each of the resource concerns.

Comments were received from several parties regarding assumptions of out-of-state resources to be included in the analysis. These are for regions that have been recommended to not be considered further in Phase 1B. Sempra Generation, OptiSolar, and First Solar commented that solar PV should not be limited to California. Sempra Generation commented that in addition to solar, RETI should consider wind resources in Arizona. To the extent that parties provide information on specific projects located out-of-state with planned delivery to California, these will be included in the RETI analysis.

### 6.1 Solid Biomass

Both the Biomass Industry and the Environmental Parties commented on the biomass resource assessment. The biomass industry noted that resource assessment performed by the California Biomass Collaborative (CBC) represents technical potential and is not an economic assessment. The Environmental Parties note that the CBC is an industry group and that their estimate is significantly higher than NREL. The Environmental Parties also note that the types of biomass included in the resource assessment (such as forest thinnings) require more scrutiny due to their potentially negative environmental impact. All of these comments are acknowledged and have been incorporated in the report.

The individual components of the CBC data set will likely require further review in Phase 1B to reconcile differences with the NREL estimate. In addition, it is important to ensure that the resources identified are sustainable. In Phase 1B, Black & Veatch plans to coordinate with the Environmental Working Group and biomass interests to ensure the resources included in the project identification process are environmentally sound.

### 6.2 Anaerobic Digestion

No comments were received on this section.

### **6.3 Landfill Gas**

No comments were received on this section.

### **6.4 Solar Thermal**

Many parties commented on the land use requirements for solar thermal facilities. The land use assumption of 10 acres per MW was only for quantifying the technical potential, in order to determine what locations merit further study. This assumption was purposefully conservative. In Phase 1B, 7 acres per MW will be used for the solar thermal projects. The report has been updated to make this point more clear.

Several environmental groups commented that the NREL exclusions used to screen the available land were insufficient and had not been vetted. Similar to the land use comment, NREL exclusions were used simply to screen for available technical potential. In Phase 1B, a more detailed environmental screen will be used that will be developed by the EWG

### **6.5 Solar Photovoltaic**

NRDC and the Sierra Club questioned the land requirements for solar PV. Both tracking crystalline photovoltaics and fixed thin film require about 7 acres per MW. The report has been updated to include this.

### **6.6 Hydroelectric**

The Environmental Parties strongly urged that hydro be dropped from RETI Phase 1. Black & Veatch reassessed the hydro resource in revised Phase 1A report. This revised assessment included a stricter environmental screen tied to the California RPS regulations. Efficiency upgrades and power additions to existing dams were the only resources reviewed. No new sites were included. As a result of this more restrictive filter, a total of 596 MW of hydro was identified, about half of which is in British Columbia. Because of the limited resource, and relatively small, scattered potential, Black & Veatch recommends that small hydro resources not be considered in detail in the Phase 1B analysis. Hydro's contribution to the RPS will be handled in aggregate.

### **6.7 Wind**

Several parties suggested that an additional data source for RETI for project identification is the BLM GeoCommunicator tool. Additionally, several parties noted that a detailed analysis of wind resources in British Columbia by Garrad Hassan was available. Black & Veatch thanks these parties for providing these references. The BLM

GeoCommunicator will be used in Phase 1B to assist with site identification. The updated British Columbia wind assessment has been included in the revised Phase 1A report.

### **6.8 Geothermal**

Vulcan provided a link to additional information on geothermal potential in Nevada. This information is appreciated and will be considered in the more detailed assessment in Phase 1B.

### **6.9 Marine Current**

Sea Breeze provided references to data on British Columbia tidal energy resources.

### **6.10 Wave**

No comments were received on this section.

## 7.0 Recommended Phase 1B Scope of Work

The Phase 1B Scope of Work is in Appendix A of the Draft Final Phase 1A Report. Based on the comments received and other considerations, the following significant changes were made to the Phase 1B Scope of Work.

- Hydro was removed from the scope
- It was clarified that resource assessment for California will be on a project-specific basis, while the resource assessment outside of California will be based on broad resource classes
- Responsibility for various activities (e.g., managing a developer request for information and purchasing an energy price forecast) has been shifted to other parties
- Interaction with the EWG and expectations for input have been identified as part of the resource assessment and CREZ ranking tasks
- It was clarified that CREZs will be ranked in tiers that reflect the inherent uncertainty in the analysis
- The additive economics criterion for CREZ delineation was removed
- It was clarified that the final selection of CREZs based on combined economic, environmental, and any other criteria will be the responsibility of other parties
- The role of Black & Veatch in the Phase 1B working groups was specified